

A similar situation is possibly threatening the existence of *Anthicus antiochensis* Werner, which is restricted to the small sand dune area near Antioch, California. The dune area, including the type locality, has been severely reduced by the construction of a large industrial plant. The type series of *antiochensis* was collected prior to the construction of the plant in 1952-1953. Only recently was a small series collected, despite repeated attempts to collect the species during the intervening years.

Literature Cited²

- Werner, F. G. 1964. A revision of the North American species of *Anthicus*, s. str. (Coleoptera: Anthicidae). Misc. Publ. Entomol. Soc. America 4:197-242.

SCIENTIFIC NOTE

Notes on Mantids (*Stagmomantis*, *Iris*) as Possible Predators of Conenose Bugs (*Triatoma*, *Paratriatoma*). — Wood (1975, NPCO News 35:18) reported experimental destruction of *Triatoma* by a mantid, *Litaneutria* (?). Mantids were confined to covered circular plastic dishes, 26 cm in diameter and 10 cm deep. A piece of damp filter paper covered the floor of the container. For aeration, the lids were drilled with five holes, 3 mm in diameter.

A male California mantid, *Stagmomantis californica* Rehn & Hebard, ate one male *Triatoma protracta navajoensis* Ryckman except for five legs and two wings. Six days later it ate one replete fifth instar nymph except for head, legs and the posterior half of the abdomen.

Three female Mediterranean mantids, *Iris oratoria* (Linnaeus), were collected X-13-75 on oleanders at Borrego Springs, San Diego Co., CA. Strohecker (1952, Pan-Pacific Ent. 28:138) first reported this mantid from the Coachella Valley east of the Borrego Valley in California. In the laboratory at Thousand Oaks they were at first confined to plastic dishes and offered chiefly *T. p. navajoensis* as food. The mantids feed from any position, horizontal, head up or head down. The pattern of feeding was to grasp the triatome by the head and abdomen with both forelegs and begin chewing vigorously on the thorax with the victim held horizontally. In most instances the prothorax and head were consumed first, followed by the rest of the thorax and abdomen. By eating the smaller portion first, the mantid freed one leg for aid in holding and manipulating the heavier abdomen. The insect systematically chewed along the outer edges of the exoskeleton, segment by segment, pausing periodically to consume the internal tissues. Individual legs of the

triatomes were consumed quickly from coxa to tarsus or vice versa with no foreleg involved. Smaller third instars were consumed in two or three minutes, fifth instars and adults in 40 to 59 minutes.

The isolation area in the back yard consisted of a 360 x 120 x 30 cm rough redwood garden box with 70 cm vertical uprights at each end supporting a horizontal bamboo pole. Measurements for the garden box, and egg cases below, indicate length, width and height. The box was planted with lettuce, beets, carrots, peppers and parsley and covered with green nylon netting. The most noticeable insect inhabitants were ants, aphids and small beetles. The redwood box extended east and west with the north side bordering a cement walk extending 105 cm to the south wall of the house. The east, south and west sides of the box were surrounded by pea gravel covered open space 105 to 240 cm from the nearest uncovered ground surface, trees or other plants. A redwood tub with flowering carnations was placed at the west end of the box for transfer of the mantid when replanting the box. Observation of feeding behavior was made on both confined and freed mantids.

One female *Iris* which ate two fifth instar *T. p. navajoensis* was released in the garden box X-18 and recaptured X-31-75. On X-18-75 another female which also ate two fifth instar *T. p. navajoensis* deposited one egg case averaging 13 X 75 X 5.5 mm on filter paper in the laboratory. Another female which ate 13 conenose bugs (four third, one fourth, four fifth instar nymphs and one male *T. p. navajoensis*; one male *T. p. protracta* (Uhler); and one fifth instar and one male *Paratriatoma hirsuta* Barber) was released XI-18-75 in the garden box while depositing salivary fluids on the writer's fingers. This female deposited two egg cases 18 X 6 X 5 mm and 17 X 5 X 5 mm in tandem on the outside of the rough redwood siding in a nail depression 22.5 cm below the SE corner of the box on I-11-76. A single egg case 14 X 8 X 6 mm was deposited by the same female I-12-76 on a vertical support at the E end of the box 67.5 cm above the gravel surface, under and slightly N of the end of a 2.5 cm diameter bamboo pole supporting the netting. Gurney (1955, *ibid* 31:67-72) measured three egg cases 10, 16 and 20 mm long, 6-7 mm wide at base and 5 mm high for one captive female at Riverside, CA. When the netting was removed over the growing plants, the female remained at the E end of the box on the vertical support near the single egg case. During warm sunny January days the mantid wandered off onto the white stucco house wall into the shade, was recaptured and placed on carnation plants at the W end of the planter box. From XII-28-75 to I-31-76 this mantid ate five conenose bugs handed it in the garden with forceps (one fourth instar *T. p. navajoensis*, one fifth instar *P. hirsuta* plus the adults indicated above). Argentine ants, aphids and other insects were available to the mantid which remained free in the garden. It hung mostly head down on the plant stems near buds or flowers until a victim came within reach. On II-7-76 the mantid moved under the shelter of a large white carnation flower during a three day rain. On Feb. 26 a distended abdomen indicated feeding on available garden insects. Total length on Feb. 27 was 48 mm. On Feb. 28 with an 80°F air temperature, the mantid refused one fourth instar and one female *T. p. navajoensis* offered on forceps. On Mar. 28 at 63°F, one fourth instar was refused. The mantid disappeared IV-7-76.

The first mantids hatched in the laboratory were noted VII-20-76 or 276 days after deposit of the single egg case on the filter paper. The last mantid observed hatching was on IX-3-76. Of 46 nymphs hatched 31 were released alive on garden plants, 10 were found dead and five others had been partially eaten. None were seen hatching from the double or single egg cases on the garden box. Six nymphs measured 6 mm and one 10 mm long. Laboratory temperatures averaged much cooler than outside air temperatures. One 40 mm nymph was captured in the front yard on XI-9-76. Another 44 mm nymph rested on a 150 cm pole in the sun 104 cm above the ground from Sept. 23 among tomato plants and disappeared X-8-76. One 45 mm nymph was collected on the netting over the garden box on IV-8-77, fed on one fourth instar *T. p. navajoensis* in the laboratory and was released I V 10-77.

It is therefore certain that some mantids will eat *Triatoma* and *Paratriatoma*. Those occurring in natural microhabitats of conenose bugs and their environs, especially dens of the wood rat, *Neotoma*, would be most significant in possible control of conenose bugs. — SHERWIN F. WOOD, 614 West Shenandoah St., Thousand Oaks, CA 91360.